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DESCRIPTION OF A NEW CAVE SALAMANDER,
SPELERPES STEJNEGERI, FROM THE CAVES
OF SOUTHWESTERN MISSOURI*

BY CARL H. EIGENMANN

WITH TWO PLATES

Through the courtesy of the officials of the "Frisco" R. R. and a grant from the Elizabeth Thompson Science Fund I made two trips to the caves of southwestern Missouri in search of *Typhlotriton* and *Troglichthys*. At that time I collected in various caves a species of Salamander which is here described as new. In Wilson's cave, near Sarcxie, Missouri, I found this Salamander among the rocks which dam the stream at the mouth of the cave. In Rock House cave I found it, with *Plethodon glutinosus* and *Spelerpes maculicaudus*, under slabs of rock which served as stepping-stones just within the mouth of the cave. In Fisher's cave, near Springfield, I found it under rocks in a part of the cave which served as a cellar. I found it also in a small well-shaped cave near Marble cave, Stone county, Missouri. I have recently received living specimens from near Marble cave. In all cases it was found near the entrance, never at a great distance within the cave.

In 1880 Cope (Am. Nat., XXIV) described a new salamander, *Spelerpes maculicaudus*, from a spring at Brookville, Indiana. This species has since been found to be the common cave salamander of the Mississippi valley. It is found in and near caves, rarely being taken at any great distance within the mouth of a cave. It is especially abundant in the neighborhood of Wyandotte cave. It is common underneath rocks near limestone springs about Bloomington, Indiana; west of the Mississippi it was taken in Rock House and Wilson's caves and about Marble cave of southwestern Missouri.

A second cave salamander, *Typhlotriton*, was described by

* Contributions from the Zoological Laboratory of the Indiana University, No. 41.

Stejneger (Proc. U. S. Nat. Mus., XV, p. 115) from Rock House cave, Mo. This salamander I have found in Rock House cave and also in Marble cave, Mo. It is distinctly a cave species as distinguished from a twilight species. It is found in remote places in caves and also about their mouths, but has never been found outside. I have recently (Biol. Bull., II, 33, 1900) described the eye of this species. It shows early stages of degeneration.

A third cave salamander, *Typhlomolge*, was described by Stejneger (Proc. U. S. Nat. Mus., XVIII, p. 619) from the subterranean streams of central Texas. As far as modification of structure as an adaptation to cave-life goes this is the cave salamander par excellence of North America. I have described its eyes in the Transactions of the American Microscopical Society, 1899, p. 49.

The relationship of the last two salamanders is still in some doubt. They are the sole representatives of their respective genera. The fourth cave salamander, described below, belongs to a genus of wide distribution and many species; it is in fact closely related to *Spelerpes longicaudus* and *maculicaudus*. Like the latter, it is a twilight species rather than distinctly a cave species, having been found within a few yards of the mouth of the caves in which it was taken.

Type: 134 mm., Rock House cave, Missouri.

Cotypes: a. One specimen, 100 mm., Fisher's cave, near Springfield Missouri.

b. One specimen, 111 mm., Wilson's cave, Sarcoxie, Missouri.

c. One specimen, 112 mm., Wilson's cave, Sarcoxie, Missouri.

d. One specimen, U. S. National Museum.

e and f. Two specimens now alive from near Marble cave.

For comparison I have a specimen of *Spelerpes maculicaudus*, 133 mm., 53 to anus, from Wilson's cave, Sarcoxie, Missouri; another specimen (53 mm. to anus) from Rock House cave; a number of specimens, 59-133 mm., from Bloomington, Indiana. One specimen of *Spelerpes longicaudus*, 148 mm., from Carlisle, Pennsylvania, and another, 71 mm., from Richmond, Indiana.

Spelerpes stejnegeri differs from both *maculicaudus* and *longicaudus* in color. All the specimens of *maculicaudus*, both

small and large, are Chinese orange in life and have the back and sides of the body, the tail and limbs covered with sharply defined, irregularly rounded or elongated spots. Below the lateral spots of the body there is in older specimens a tinge of dusky. A specimen from Rock House cave, which is regenerating a tail lost some time before capture, has the orange color of the other specimens tinged with darker, and in this specimen the region between the fore and hind limbs is dark, the red ground color remaining as spots and marblings. *Spelerpes maculicaudus* has the back similarly marked with black spots on a sienna background. The sides of the body are marked with a dark streak extending from the eye back and interrupted at the costal grooves. Below this streak the sides are again spotted. The sides of the tail contain many dark bands which nearly meet across the back.

The back in *Spelerpes stejnegeri* is raw sienna, with many spots, coalescing in places, and irregularly arranged in two series on either side of the median line. The median line and a streak from the eye back to above the hind limbs, are free from spots. The back of the tail has fewer or no spots. Sides dark brown, with irregular dots and marblings of sienna. The type specimen from Rock House cave has the spots of the back more numerous than the cotypes, and the belly tinged with dark, whereas it is clear in the cotypes. Whether this difference is due to size or to locality I am unable to say. The specimen of *S. maculicaudus* from Rock House cave is also, as mentioned above, much darker than specimens from elsewhere.

Costal grooves 13. Comparative measurements of the type with the specimen of *S. maculicaudus* from Wilson's cave:

	<i>Spelerpes maculicaudus</i>	<i>Spelerpes stejnegeri</i>
Total length	132½ mm.	134 mm.
Width of head.....	10 mm.	8½ mm.
Distance of arm from tip of snout, 17	mm.	16 mm.
Length of arm and hand.....	15 mm.	13 mm.
Distance of leg from tip of snout..	45½ mm.	43½ mm.
Length of foot and leg.....	16 mm.	13½ mm.
Distance of anus from tip of snout,	51 mm.	51 mm.
Greatest depth of tail.....	5½ mm.	6 mm.
Width of tail at point of greatest depth	5½ mm.	4½ mm.

Fingers and toes meeting or overlapping on sides in *maculicaudus*. Fingers and toes in *stejnegeri* not meeting on sides by a space equal at least to the width of an intercostal space. (In smaller specimens this space is less, and the legs may even meet.) Tail more compressed in *stejnegeri* than in *maculicaudus*. Vomerine teeth arranged in the shape of a V with the anterior limbs ending behind the internal nares as in *S. longicaudus*.

I take great pleasure in dedicating this new cave salamander to Doctor L. Stejneger, who described *Typhlomolge* from the Texas subterranean streams, and *Typhlotriton* from Rock House cave, and who assisted me with advice and with specimens for the preparation of this report.

EXPLANATION OF PLATES

Plate XXVII

Fig. 1. *Spelerpes maculicaudus*, 130.5 mm. Wilson's cave, Sarcoxie, Missouri.

Fig. 2. *Spelerpes longicaudus*, 147.5 mm. Carlisle, Pennsylvania U. S. Nat. Mus. No. 11,456.

Plate XXVIII

Fig. 3. *Spelerpes stejnegeri*, 112 mm. Wilson's cave, Sarcoxie, Missouri.

PLATE XXVII



FIG. 1

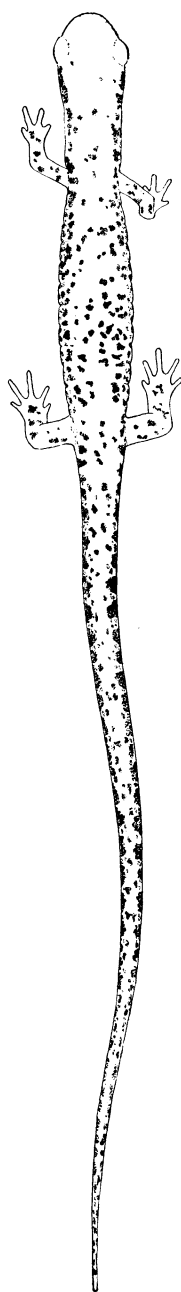
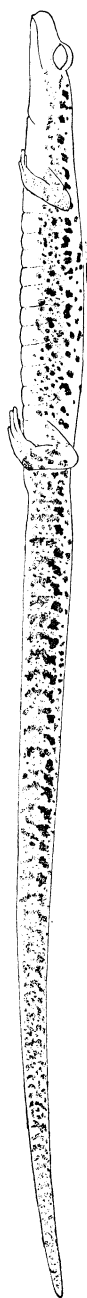
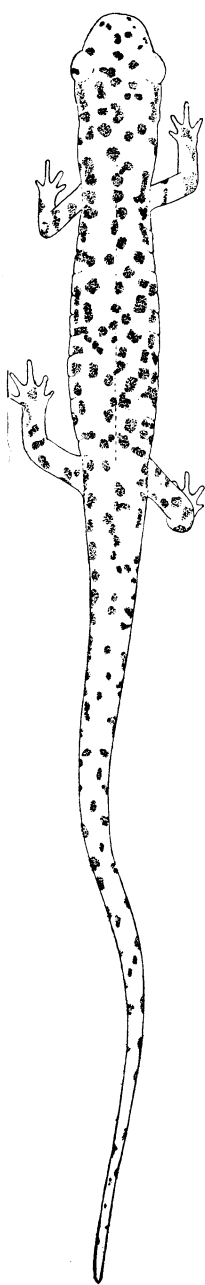


FIG. 2

PLATE XXVIII

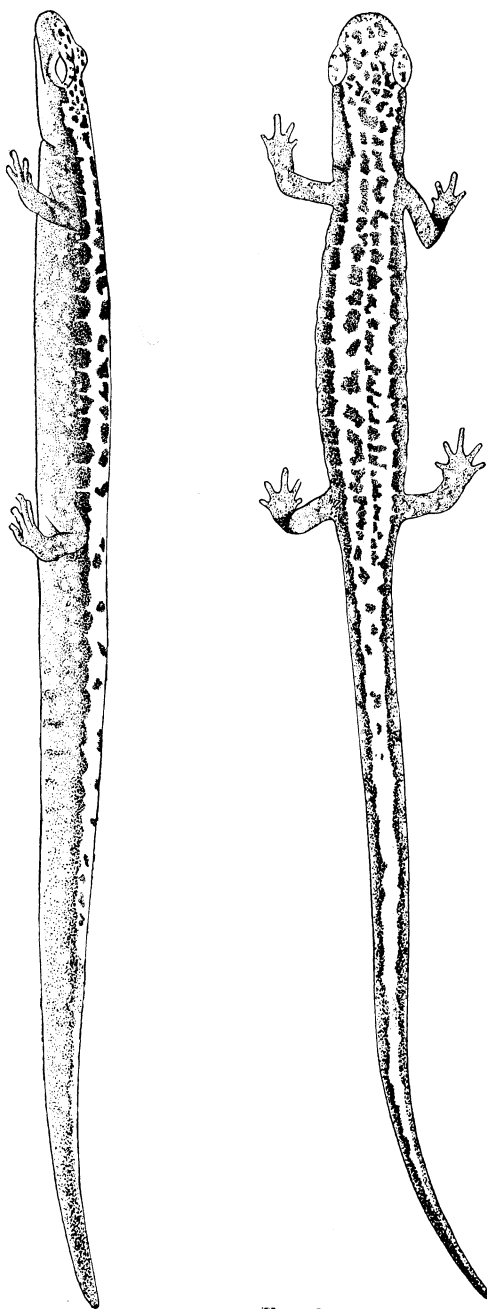


FIG. 3